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EXAMINER	
TARANINA, MARINA Y	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/602,623	Applicant(s) WATANABE, SHIGEKI	
	Examiner Marina Taranina	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 25 Jun 2003.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-27 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-27 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 25 June 2003 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 25 jun 2003.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because of misspelling of the word "compensator" in phrase "output pulse from dispersion compensator" in figures 1, 3, 4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 5, 6/5, 17 and 18/17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 5 line 4 and Claim 17 line 4 recite "**and/or** the second nonlinear optical medium". It is unclear whether "**and/or**" refers to "**and**" or to "**or**". The scope of the invention with "*an optical amplifier for amplifying the signal light to be input into the first nonlinear optical medium* ***and*** *the second nonlinear optical medium*" differs from the scope of the invention with "*an optical amplifier for amplifying the signal light to be input into the first nonlinear optical medium* ***or*** *the second nonlinear optical medium*". Claims were examined using limitation "or".

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 7-11, 13-17 and 19-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakamoto et al. ("All optical wavelengths conversion of 500-fs pulse trains by using a nonlinear optical loop mirror composed of a highly nonlinear DSF").

(1) With respect to claim 1, Sakamoto discloses a method of processing an optical signal, comprising the steps of:

(a) inputting signal light into a first nonlinear optical medium (DFF in fig. 2) to broaden the spectrum of the signal light through self phase modulation occurring in the first nonlinear optical medium (DFF in fig. 2), thereby obtaining first spectrally broadened light (output of normal dispersion DFF in fig. 2, page 504, 1st col., lines 38-42);

(b) compensating for chromatic dispersion (SMF in fig. 2, SMF having anomalous GVD, page 504, 1st col., lines 42-43) effected on the first spectrally broadened light (output of DFF in fig. 2); obtained in the step (a);

(c) inputting the first spectrally broadened light (output of DFF in fig. 2) processed by the step (b) (output of SMF in fig. 2) into a second nonlinear optical medium (HNL-DSF in fig. 2) to broaden the spectrum of the first spectrally broadened light through self phase modulation occurring in the second nonlinear optical medium (HNL-DSF in fig. 2), thereby obtaining second spectrally broadened light (output of HNL-DSF in fig. 2, abstract and page 502, 1st col. lines 19-21).

(2) With respect to claim 2, Sakamoto discloses a method according to claim 1, wherein each of the first and second nonlinear optical media comprises an optical fiber (DFF and HNL-DSF in fig. 2).

(3) With respect to claim 3, Sakamoto discloses a method according to claim 2, wherein the optical fiber (DFF and HNL-DSF in fig. 2) provides normal dispersion (for

DFF – see fig. 2, also page 504, 1st col., line 41; for HNL-DSF – [beta3 > 0], see page 502, 2nd col., lines 36-37).

(4) With respect to claim 4, Sakamoto discloses a method according to claim 2, wherein the step (b) comprises the step of compensating for chromatic dispersion occurring in the optical fiber (SMF in fig. 2, SMF having anomalous GVD, page 504, 1st col., lines 42-43).

(5) With respect to claim 5, Sakamoto discloses a method according to claim 1, further comprising the step of providing an optical amplifier for amplifying the signal light (amplifier at the output of "Pulse" block in fig. 2 or amplifier at the output of "CW" block in fig. 2) to be input into the first nonlinear optical medium (DFF in fig. 2) or the second nonlinear optical medium (HNL-DSF in fig. 2).

(6) With respect to claim 7, Sakamoto discloses a method according to claim 1, further comprising the step of providing an optical bandpass filter (BPF in fig. 2) for inputting the second spectrally broadened light (output of HNL-DSF in fig. 2) obtained in the step (c).

(7) With respect to claim 8, Sakamoto discloses a method according to claim 7, wherein the optical bandpass filter (BPF in fig. 2) has a passband (16 nm, page 504, 1st col., lines 47-48) narrower than the spectral width (2.delta.lambda = 26nm, page

502, 2nd col. lines 37-38) of the second spectrally broadened light (output of HNL-DSF in fig. 2).

(8) With respect to claim 9, Sakamoto discloses a method according to claim 8, wherein the center wavelength in the passband (1557nm, page 504, 1st col., lines 46-48) is different from the wavelength of the signal light (1531nm, page 504, 1st col., lines 45-46), whereby the waveform of the signal light is improved (fig. 3, page 504, 1st col., lines 51-58, 2nd col., lines 1-2).

(9) With respect to claim 10, Sakamoto discloses a method according to claim 8, wherein the passband is narrow enough to extract an optical carrier (CW light) from the second spectrally broadened light (output of HNL-DSF in fig. 2) (page 504, 1st col., lines 45-48).

(10) With respect to claim 11, Sakamoto discloses a method according to claim 8, wherein the passband is wide enough to extract a pulse train synchronous with the pulse train of the signal light from the second spectrally broadened light (output of HNL-DSF in fig. 2) (page 504, 2nd col., lines 3-10, also Fig. 4a and 4b).

(11) With respect to claim 13, Sakamoto discloses a device for processing an optical signal, comprising:

a first nonlinear optical medium (DFF in fig. 2) for inputting signal light to broaden the spectrum of the signal light through self phase modulation occurring in the first nonlinear optical medium (DFF in fig. 2), thereby obtaining first spectrally broadened light (output of normal dispersion DFF in fig. 2, page 504, 1st col., lines 38-42);

a dispersion compensator (SMF in fig. 2) for compensating for chromatic dispersion (SMF has an anomalous GVD, page 504, 1st col., lines 42-43) effected on the first spectrally broadened light (output of DFF in fig. 2) obtained by the first nonlinear optical medium (DFF in fig. 2);

a second nonlinear optical medium (HNL-DSF in fig. 2) for inputting the first spectrally broadened light (output of DFF in fig. 2) processed by the dispersion compensator (SMF in fig. 2) to broaden the spectrum of the first spectrally broadened light through self phase modulation occurring in the second nonlinear optical medium (HNL-DSF in fig. 2), thereby obtaining second spectrally broadened light (output of HNL-DSF in fig. 2).

(12) With respect to claim 14, Sakamoto discloses a device according to claim 13, wherein each of the first and second nonlinear optical media comprises an optical fiber (DFF and HNL-DSF in fig. 2).

(13) With respect to claim 15, Sakamoto discloses a device according to claim 14, wherein the optical fiber (DFF and HNL-DSF in fig. 2) provides normal dispersion

(for DFF – see fig. 2, also page 504, 1st col., line 41; for HNL-DSF – [beta3 > 0], see page 502, 2nd col., lines 36-37).

(14) With respect to claim 16, Sakamoto discloses a device according to claim 14, wherein the dispersion compensator (SMF in fig. 2) comprises means for compensating for chromatic dispersion occurring in the optical fiber (SMF has an anomalous dispersion, page 504, 1st col., lines 42-43).

(15) With respect to claim 17, Sakamoto discloses a device according to claim 13, further comprising an optical amplifier for amplifying the signal light (amplifier at the output of "pulse" block in fig. 2 or amplifier at the output of "CW" block in fig. 2) to be input into the first nonlinear optical medium (DFF in fig. 2) or the second nonlinear optical medium (HNL-DSF in fig. 2).

(16) With respect to claim 19, Sakamoto discloses a device according to claim 13, further comprising an optical bandpass filter (BPF in fig. 2) for inputting the second spectrally broadened light obtained by the second nonlinear optical medium (output of HNL-DSF in fig. 2).

(17) With respect to claim 20, Sakamoto discloses a device according to claim 19, wherein the optical bandpass filter (BPF in fig. 2) has a passband (16 nm, page 504, 1st col., lines 47-48) narrower than the spectral width (2.delta.lambda = 26nm,

page 502, 2nd col. lines 37-38) of the second spectrally broadened light (output of HNL-DSF in fig. 2).

(18) With respect to claim 21, Sakamoto discloses a device according to claim 20, wherein the center wavelength in the passband (1557nm, page 504, 1st col., lines 46-48) is different from the wavelength of the signal light (1531nm, page 504, 1st col., lines 45-46), whereby the waveform of the signal light is improved (fig. 3, page 504, 1st col., lines 51-58, 2nd col., lines 1-2).

(19) With respect to claim 22, Sakamoto discloses a device according to claim 20, wherein the passband is narrow enough to extract an optical carrier (CW light) from the second spectrally broadened light (output of HNL-DSF in fig. 2) (page 504, 1st col., lines 45-48).

(20) With respect to claim 23, Sakamoto discloses a device according to claim 20, wherein the passband is wide enough to extract a pulse train synchronous with the pulse train of the signal light from the second spectrally broadened light (output of HNL-DSF in fig. 2) (page 504, 2nd col., lines 3-10, also Fig. 4a and 4b).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 6 (6/5/1) and 18 (18/17/13) are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al. ("All optical wavelengths conversion of 500-fs pulse trains by using a nonlinear optical loop mirror composed of a highly nonlinear DSF") in view of Tatham et al. ("Transmission of 10Gbit/s directly modulated DFB signals over 200km standard fibre using mid-span spectral inversion").

(1) With respect to claim 6, Sakamoto discloses all the subject matter as recited in claims 1 and 5, but fails to teach compensating for chromatic dispersion occurring in the optical amplifier.

However, Tatham teaches a method for compensating for chromatic dispersion occurring in an optical amplifier (fig. 1, page 1335, 1st col., abstract - all, introduction - lines 7-13, 17-19).

It is beneficial to compensate for chromatic dispersion occurring in optical amplifiers because it is highly effective in constructing a long-haul, ultra high-speed and high-quality optical transmission system. A non-compensated dispersion, especially when interacting with other nonlinearities, leads to increased waveform distortion of the signal light (as shown in Tatham, fig. 3, results: page 1335, 2nd col., lines 1315, page 1336, 1st col., lines 1-2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include method for compensating for chromatic dispersion occurring in an optical amplifier as taught by

Tatham in the wavelengths conversion system of Sakamoto as to improve quality and effectiveness of transmission over long-haul distances.

(2) With respect to claim 18, Sakamoto discloses all the subject matter as recited in claims 13 and 17, but fails to teach the dispersion compensator comprising means for compensating for chromatic dispersion occurring in the optical amplifier.

However, Tatham teaches a system for compensating for chromatic dispersion occurring in an optical amplifier (fig. 1, page 1335, 1st col., abstract - all, introduction - lines 7-13, 17-19).

It is beneficial to compensate for chromatic dispersion occurring in optical amplifiers because it is highly effective in constructing a long-haul, ultra high-speed and high-quality optical transmission system. A non-compensated dispersion, especially when interacting with other nonlinearities, leads to increased waveform distortion of the signal light (as shown in Tatham, fig. 3, results: page 1335, 2nd col., lines 1315, page 1336, 1st col., lines 1-2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include method for compensating for chromatic dispersion occurring in an optical amplifier as taught by Tatham in the wavelengths conversion system of Sakamoto as to improve quality and effectiveness of transmission over long-haul distances.

8. Claims 12 (12/8/7/1) and 24 (24/20/19/13) are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al. ("All optical wavelengths conversion of 500-

fs pulse trains by using a nonlinear optical loop mirror composed of a highly nonlinear DSF") in view of Mamyshev (US 6,141,129).

(1) With respect to claim 12 (12/8/7/1), Sakamoto discloses all the subject matter as recited in claims 1, 7 and 8, but fails to teach optical BPF comprising a plurality of passbands.

However, Mamyshev teaches an all-optical signal regenerator incorporating a plurality of bandpass filters (passbands), each having a unique center frequencies (103, 105, 107 in fig. 10, col. 10, lines 21-33).

It is desirable to have plurality of bandpass filters (passbands) in all-optical signal regenerators. The reason for that is that regenerated signals in such configuration are available simultaneously at a plurality of wavelengths, which is beneficial to use in optical systems due to the conversion efficiency.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include plurality of bandpass filters (passbands) as taught by Mamyshev in method of Sakamoto as to improve the conversion efficiency.

(2) With respect to claim 24 (24/20/19/13), Sakamoto discloses all the subject matter as recited in claims 13, 19 and 20, but fails to teach an optical BPF wherein the passband comprises a plurality of passbands.

However, Mamyshev teaches an all-optical signal regenerator incorporating a plurality of bandpass filters (passbands), each having unique center frequencies (103, 105, 107 in fig. 10, col. 10, lines 21-33).

It is desirable to have plurality of bandpass filters (passbands) in all-optical signal regenerators. The reason for that is that regenerated signals in such configuration are available simultaneously at a plurality of wavelengths, which is beneficial to use in optical systems due to the conversion efficiency.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include plurality of bandpass filters (passbands) as taught by Mamyshev in device of Sakamoto as to as to improve the conversion efficiency.

9. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. (EP 1 056 173 A2) in view of Sakamoto et al. ("All optical wavelengths conversion of 500-fs pulse trains by using a nonlinear optical loop mirror composed of a highly nonlinear DSF").

(1) With respect to claim 25, Watanabe discloses a system comprising:

an optical coupler (30 in fig. 7) for splitting signal light into first and second signal lights (col. 12 lines 44-47, 51-52);

an optical clock regenerator (34 in fig. 7) for generating clock pulses according to the first signal light (input of 34 in fig. 7) (col. 12 lines 56-58, col. 13 line 1);

an optical AND circuit (36 in fig. 7) for inputting the clock pulses (output of 34 in fig. 7) and the second signal light (output of 32 in fig. 7) to output converted signal light (output of 36 in fig. 7) obtained by synchronization of the clock pulses and the second signal light (col. 13 lines 1-5, 13-17);

an optical signal processing device (wavelength converter, not shown, but recited in para 0080, fig. 7) for inputting the converted signal light (col. 17 lines 19-22) output from the optical AND circuit (output of 36 in fig. 7).

Watanabe discloses all the subject matter as recited above, but fails to teach a specific configuration of an optical signal processing device as recited in Claim 25.

However, Sakamoto teaches an optical signal processing device (fig. 2) comprising:

a first nonlinear optical medium (DFF in fig. 2) for inputting the converted signal light to broaden the spectrum of the converted signal light through self phase modulation occurring in the first nonlinear optical medium (DFF in fig. 2), thereby obtaining first spectrally broadened light (output of normal dispersion DFF in fig. 2, page 504, 1st col., lines 38-42);

a dispersion compensator (SMF in fig. 2) for compensating for chromatic dispersion (SMF has an anomalous GVD, page 504, 1st col., lines 42-43) effected on the first spectrally broadened light (output of DFF in fig. 2) obtained by the first nonlinear optical medium (DFF in fig. 2);

a second nonlinear optical medium (HNL-DSF in fig. 2) for inputting the first spectrally broadened light (output of DFF in fig. 2) processed by the dispersion compensator (SMF in fig. 2) to broaden the spectrum of the first spectrally broadened light through self phase modulation occurring in the second nonlinear optical medium (HNL-DSF in fig. 2), thereby obtaining second spectrally broadened light (output of HNL-DSF in fig. 2);

an optical bandpass filter (BPF in fig. 2) for inputting the second spectrally broadened light (output of HNL-DSF in fig. 2), having a passband whose center wavelength (1557nm, page 504, 1st col., lines 46-48) is different from the center wavelength of the second spectrally broadened light (lambda.0. = 1544nm, fig. 2), thereby obtaining a signal component (CW signal) of the inputted light.

It is beneficial to use the wavelength converter specifically configured as taught by Sakamoto. The reason for that is that the configuration allows an ultrafast wavelength conversion while peak power of the pulse trains is kept low, the fiber loop length of NOLM is reduced, and polarization stability is improved. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wavelength converter as taught by Sakamoto into system of Watanabe as to improve characteristics of the system.

Furthermore, with respect to claim 26, Watanabe discloses a system according to claim 25, comprising a waveform shaper (32 in fig. 7) for increasing the pulse width of the second signal light (col. 13 lines 6-11).

(2) With respect to claim 27, Watanabe discloses a system comprising:
a first optical fiber transmission line for transmitting signal light (70 between 74 and 72 in fig. 10, para 0102);

an optical signal processing device (72 in fig. 10) for inputting the signal light transmitted by the first optical fiber transmission line (70 between 74 and 72 in fig. 10) (para 0103);

a second optical fiber transmission line (70 between 72 and 76 in fig. 10) for transmitting regenerated light output from the optical signal processing device (72 in fig. 10, para 0102).

Watanabe discloses all the subject matter as recited above, but fails to teach a specific configuration of an optical signal processing device as recited in Claim 27.

However, Sakamoto teaches an optical signal processing device (fig. 2) comprising:

a first nonlinear optical medium (DFF in fig. 2) for inputting the signal light to broaden the spectrum of the signal light through self phase modulation occurring in the first nonlinear optical medium (DFF in fig. 2), thereby obtaining first spectrally broadened light (output of normal dispersion DFF in fig. 2, page 504, 1st col., lines 38-42);

a dispersion compensator (SMF in fig. 2) for compensating for chromatic dispersion (SMF has an anomalous GVD, page 504, 1st col., lines 42-43) effected on the first spectrally broadened light (output of DFF in fig. 2) obtained by the first nonlinear optical medium (DFF in fig. 2);

a second nonlinear optical medium (HNL-DSF in fig. 2) for inputting the first spectrally broadened light (output of DFF in fig. 2) processed by the dispersion compensator (SMF in fig. 2) to broaden the spectrum of the first spectrally broadened light through self phase modulation occurring in the second nonlinear optical medium (HNL-DSF in

fig. 2), thereby obtaining second spectrally broadened light (output of HNL-DSF in fig. 2);

an optical bandpass filter (BPF in fig. 2) for inputting the second spectrally broadened light (output of HNL-DSF in fig. 2), having a passband whose center wavelength (1557nm, page 504, 1st col., lines 46-48) is different from the center wavelength of the second spectrally broadened light (lambda.0. = 1544nm, fig. 2), thereby obtaining a signal component (CW signal) of the inputted light.

It is beneficial to use the wavelength converter specifically configured as taught by Sakamoto. The reason for that is that the configuration allows an ultrafast wavelength conversion while peak power of the pulse trains is kept low, the fiber loop length of NOLM is reduced, and polarization stability is improved. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wavelength converter as taught by Sakamoto into system of Watanabe as to improve characteristics of the system.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 5,539,563 discloses System and method for simultaneously compensating for chromatic dispersion and self phase modulation in optical fibers;

US 6,498,669 discloses Optical pulse propagation;

US 6,509,992 discloses Optical transmission using dispersion-enhanced signals;

US 5,943,151 discloses Method of selectively compensating for the chromatic dispersion of optical signals.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marina Taranina whose telephone number is 571 270 1085. The examiner can normally be reached on Mon-Fri (alternative Fri off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571 272 2600. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MT
02 Aug 2006

Shuwang Liu

SHUWANG LIU
SUPERVISORY PATENT EXAMINER